

REMARKS

Claims 3, 6-17, 20, 23-33, 35-36, 38-40 and 42-46 are pending in the present application. Claims 3 and 6 have been rewritten in independent form by adding all the limitations previously incorporated by reference. Claims 1-2, 4-5, 37 and 41 have been canceled. Claims 7-8, 11-12, 14, 17, 20, 23, 26-29, 33, 42-43 and 46 are rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,871,071 to Takao et al. ("Takao") in view of U.S. Patent No. 6,912,228 to Dahlman et al. ("Dahlman") and in further view of U.S. Patent No. 6,347,231 to Miya. Claims 31, 38-40, and 44-45 are rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 7,068,607 to Partain et al. ("Partain"). Claim 32 is rejected under 35 U.S.C. § 103(a) over Partain in view of U.S. Patent No. 6,167,240 to Carlsson et al. ("Carlsson"). Applicant traverses and respectfully requests reconsideration and withdrawal of the rejections thereto.

Applicant thanks the Examiner for indicating the allowability of claims 3, 6, 9-10, 13, 15-16, 24-25, 30 and 35-36 in paragraph 7 of the Office Action.

In paragraphs 1-2 of the Office Action, claims 7-8, 11-12, 14, 17, 20, 23, 26-29, 33, 42-43 and 46 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Takao et al. in view of Dahlman and in further view of U.S. Patent No. 6,347,231 to Miya. The rejections on these grounds are respectfully traversed.

Independent claim 7 recites "controllably changing transmission power of a common control signal, which governs a scope of service area that a radio base station forms to suppress interference between service areas." Independent claims 11 and 14 recite "controlling [] transmission power of a common control signal which governs a scope of service area that a radio base station forms to suppress interference [between service areas]." Neither Takao nor Dahlman and Miya alone, or in combination, disclose the above-recited limitations. Accordingly, the Office Action fails to establish a *prima facie* case of obviousness.

As an initial point, Takeo does not disclose detecting interference between plural base stations. The Office Action cites Takeo at col. 3, l. 44 to col. 4, l. 16 and col. 7, l. 59 to col. 8, l. 33 as support for this proposition. In the cited portions of cols. 3 and 4, Takeo teaches switching a handset from one base station to another, a so-called “handover control method,” when an insufficient amount of bandwidth is available. At the cited portions of cols. 7 and 8, Takeo does not disclose detecting interference between base stations, rather Takeo discloses detecting that securing a predetermined minimum bandwidth is not possible from a particular base station, or that communication traffic in a particular base station becomes congested.

Furthermore, none of the cited references, even when combined, disclose controlling transmission power of a common control signal that governs the scope of the service area that a radio base station forms to suppress interference between service areas. In particular, the Office Action admits that Takeo does not disclose controlling transmission power of a common control signal that governs a scope of service area that a base station forms (*see* pages 3, 4-5, 6-7, 8-9, 10 and 12). The Office Action alleges that Dahlman “gradually adjusts the power . . . based on that associated transmission load.” Office Action, pages 3-32. However, Dahlman teaches power control based on the load (*i.e.*, backlog of data to be transmitted), not based on interference between base stations servicing different service areas. As stated in Dahlman, “[i]f the current amount of data exceeds the previously transmitted amount of data, the transmit power is increased by an incremental amount (*e.g.*, up to a maximum value).” Dahlman, col. 5, ll. 51-54. Thus, Dahlman does not disclose the claimed limitation of “controlling transmission power . . . for interference suppression . . . between service areas,” as recited in claims 7, 11 and 14. Miya fails to cure.

In the first through third embodiments, Miya discloses a handset and teaches adjusting handset power, not base station power, based on the reception power received by the handset, among other things. Miya indicates this by clearly stating “communication apparatus of the first embodiment, **as a mobile unit**” and “a communication apparatus of the first embodiment including the transmission power control portion, which is also referred to in the second and third embodiments.” Miya, col. 5, ll. 19-26 (emphasis added). In fourth through seventh embodiments, Miya discloses a base station that generates an “sc bit” to control the

handset power. *See* Miya, col. 8 l. 65 to col. 9, l. 6, col. 10, ll. 12-18, col. 11, ll. 6-9 and 39-45, and Figs. 10, 11, 13 and 14. None of the disclosed embodiments teaches changing the base station's transmitted power. Therefore, Miya cannot cure the deficiencies of Dahlman and Takao, because it does not even detect the claimed limitation of "occurrence of interference between service areas provided by plural radio base stations" and to control power based on that interference.

For the reasons set out above, neither Takao nor Dahlman and Miya, alone or in combination, teach each and every limitation of independent claims 7, 11 and 14. Applicant thereby respectfully submits that these independent claims are presently in condition for allowance and urge reconsideration and withdrawal of the rejections thereto.

Dependent claims 8-10, 12-13 and 15-16 incorporate by reference the limitations from independent claims 7, 11 and 14. These dependent claims include additional limitations which, in combination with the limitations incorporated by reference, present additional reasons why they are allowable. Nothing in Takao, Dahlman and Miya cure the deficiencies applied to the independent claims. Applicant urges that these dependent claims are in condition for allowance as well as urge reconsideration and withdrawal of the rejections thereto.

Independent claim 42 recites a computer readable program that "controls the operation of a radio base station" that includes the "control step of responding to occurrence of interference between plural service areas and controlling transmission power, to suppress interference autonomously." As explained with respect to independent claims 7, 11 and 14, Takao, Dahlman and Miya are silent as to controlling the operation of a radio base station by controlling transmission power to suppress interference between plural service areas provided by base stations. Rather, Miya teaches controlling the power of a mobile station. Accordingly, Applicant respectfully submits that independent claim 42 is in condition for allowance and urges reconsideration and withdrawal of the rejection thereto.

Independent claims 17, 20, 43 and 46 each recite distributively controlling a load based on “the sum of sets of link utilization information collected from [respective] radio terminals for each radio base station.” Neither Takao nor Dahlman and Miya, alone or in combination, disclose this limitation. Indeed, the Office Action admits that Takao does not disclose this limitation. *See* Office Action pages 12, 14, 29 and 30. The Office Action cites Dahlman at col. 9 l. 47 to col. 10, l. 65 and Figs. 11-14 as teaching that a radio network controller (RNC), connected to a plurality of base stations, adjusts the power level of the transceiving circuitry in each sector in based on “a data packet transmission load associated with an active connection with a mobile terminal.” Dahlman, col. 10, ll 6-8. Although Dahlman teaches that “power regulation is based on an average transmission load over one or more power control time periods,” Dahlman fails to teach the claimed limitation of controlling load based on “the sum of sets of link utilization information collected from [respective] radio terminals for each radio base station.” Nothing in Takao or teaches the sum of sets of link utilization information collected from radio terminals for each radio base station, as required by claims 17, 20, 43 and 46. Accordingly, Applicant urges that neither Takao nor Dahlman and Miya teach each and every limitation of independent claim 17, 20, 43, or 46. Accordingly, Applicant respectfully submits that each of these claims are in condition for allowance and urges reconsideration and withdrawal of the rejections thereto.

Independent claims 23 and 26 each recite: “controlling transmission power of a radio base station based on said information of radio link qualities from plural radio terminals.” The Office Action admits in pages 16 and 18 that Takao does not disclose this limitation. The Office Action alleges that Dahlman teaches adjusting base station transmission power based on associated transmission load. But transmission load is not radio link quality, rather, it is the amount of data being sent over a communication channel. As taught by Dahlman, “[b]ased on the estimated channel qualities, the mobile terminal determines a maximum data rate at which the mobile terminal can receive data for each base station sector and selects the sector with the highest data rate.” Dahlman, col. 3, ll. 5-9. Dahlman shows that the prior art teaches away from the claimed limitation, stating, “in order to obtain an accurate signal quality measurement, it is desirable for all base station sectors to transmit at full power when the mobile terminal is measuring signal quality, regardless of the amount of data to transmit from each sector.”

Dahlman, col. 3, ll. 55-59. Dahlman advocates taking transmission load in controlling transmit power levels. As stated by Dahlman, "This transmission load power control is implemented so that the accuracy of channel quality estimates is not significantly affected." Dahlman, col. 4, l. 66 to col. 5, l. 1. So, Dahlman does not teach controlling transmission power based on channel quality, as required by independent claims 23 and 26. Additionally, as explained above, Miya only teaches controlling handset power. Accordingly, neither Takao nor Dahlman and Miya teach or suggest "controlling transmission power of a radio base station based on information of said radio link qualities from plural radio terminals," as required by independent claims 23 and 26. As such, Applicant respectfully suggests that independent claims 23 and 26 are presently in condition for allowance and urge reconsideration and withdrawal of the rejections thereto.

Dependent claims 24-25 and 27-28 incorporate by reference the limitations from independent claims 23 and 26. These dependent claims include additional limitations which, in combination with the limitations incorporated by reference, present additional reasons why they are allowable. Nothing in Takao, Dahlman and Miya cure the deficiencies applied to the independent claims. Applicant urges that these dependent claims are in condition for allowance as well as urge reconsideration and withdrawal of the rejections thereto.

Independent claim 29 recites "receiving information of radio link qualities from plural radio terminals; and controllably changing a frequency used by a radio base station based on said information of radio link qualities from plural radio terminals." The Office Action admits at page 20 that Takao does not disclose this limitation. The Office Action doesn't even allege that either Dahlman or Miya teaches this limitation. Instead, the Office Action merely reiterates what Dahlman and Miya teach, which is not relevant to what is claimed. Without any suggestion or teaching of the claimed limitations, claim 29 is allowable over the cited art of record. Accordingly, Applicant respectfully submits that claim 29 is presently in condition for allowance and urges reconsideration and withdrawal of the rejection thereto.

Dependent claim 30 incorporates the limitations by reference from independent claim 29. Dependent claim 30 includes additional limitations which, in combination with the limitations incorporated by reference, present additional reasons why they are allowable. Nothing in Takao, Dahlman and Miya cure the deficiencies applied to the independent claim.

Applicant urges that dependent claim 30 is in condition for allowance as well as urge reconsideration and withdrawal of the rejections thereto.

Turning to claims 33 and 35-36, independent claim 33 recites a radio terminal that includes “means for measuring a radio link quality and then notifying a radio resource management apparatus of a radio link quality information being the measurement result, the notifying means performing a notifying operation at predetermined notification intervals.” A prior Office Action admitted that Takao did not disclose this limitation. Now, the Office Action alleges that column 9, line 42 to column 10, line 55; column 11, line 65; and column 19, line 8 to column 20, line 45 of Takao teaches this limitation. Applicant respectfully disagrees.

Takeo at column 9, line 42 to column 10, line 55 discloses a radio base station measuring the traffic passing through itself and carrying out handover via a number of selection methods. Column 11, line 65 has a bare reference to a radio resource management unit controlling the switch for switching the signals of each mobile station. Column 19, line 8 to column 20, line 45 provides examples of a management table used to carry out handover. In this last citation, the only predetermined notification interval mentioned in Takao is where the **mobile stations are notified** about available radio resources in a base station. Far from notifying a radio resource management apparatus, as required by the claims, **the mobile stations receive a notification**; they do not perform a notifying operation. Hence, Takao does not disclose a radio terminal comprising “means for measuring a radio link quality and then notifying a radio resource management apparatus of radio link quality information being the measurement result, the notifying means performing a notifying operation at predetermined notification intervals” as claimed.

Dahlman teaches controlling base station power based on transmission load. Dahlman does not disclose that the mobile terminals send indications of received radio link quality back to the base station. "The base station sector 102 having the best signal quality detected by the mobile terminal transmits the data packet (including any dummy symbols), pilot signal, and any necessary control information to the mobile terminal via the signal and data processing circuitry 104 and radio transceiver circuitry 105 (block 210)." Dahlman, col. 10, ll. 59-65.

Miya teaches that the base station determines signal to interference ratio (SIR) from the signal received from a mobile terminal. *See* Miya, col. 10, ll. 50-59. But Miya does not disclose that the mobile terminal determines radio link quality, and then sends an indication of that quality back to the base station. Accordingly, Applicant urges that independent claim 33 is presently in condition for allowance and urges reconsideration and withdrawal of the rejection thereto.

As claims 35 and 36 depend from claim 33, and as nothing in Takao, Dahlman or Miya cure the deficiency of Takao as applied to independent claim 33, Applicant urges that claims 33, and 35-36 are presently in condition for allowance and urge reconsideration and withdrawal of the rejections thereto.

The Office Action rejects claims 31, 38-40, and 44-45 under 35 U.S.C. § 102(e) over Partain. The Office Action further rejects claim 32 under 35 U.S.C. § 103(a) over Partain in view of Carlsson. The rejections are the same as those in the Office Action dated April 18, 2007. The Office Action did not respond to Applicant's Responses dated July 18, 2007 and January 2, 2008, which fully addressed these rejections. Accordingly, Applicant hereby incorporates by reference the entirety of these arguments herein. Nonetheless, for the convenience of the Examiner, Applicant repeats these arguments below.

The Office Action rejects claims 31, 38-40, and 44-45 under 35 U.S.C. §102(e) as being anticipated by Partain. Each of the claims are independent. The claims recite “controllably changing a frequency used by a radio base station,” (claims 31, 40, 45) or “controlling transmission power of a base station,” (claim 39, 44); each claim recites control “based on information on radio link qualities notified from plural radio terminals.” Partain does not disclose all of these limitations.

First, as regards claims 31, 39-40, and 44-45, the Office Action admits that Partain’s bandwidth broker uses the information it collects from load measurement proxies to process on-demand admission requests. *See* Partain, Abstract and col. 3, lines 45-65, cited by the Office Action. Partain’s disclosure is silent on “controllably changing a frequency” or “controlling the power” of a base station, as required by these claims.

Moreover, claims 31, 38-40, and 44-45 each recite that control is “based on information on radio link qualities notified from plural radio terminals.” As explained at col. 6, lines 1-33 of Partain, also cited by the Office Action, Partain’s bandwidth broker client asks a bandwidth broker server whether a particular path is congested. The bandwidth broker server in turn collects responsive information from load measurement proxies located at various points in the network. As is clear in figure 3 of Partain, the load measurement proxies are either at the base station (RBS) or at a gateway (GM), not at the radio terminals. *See* also col. 7, lines 59-66 of Partain. Thus it is clear that any information used by Partain’s bandwidth broker is notified from either the base station or a gateway, and is not therefore “based on information on radio link qualities **notified from plural radio terminals**,” as required by independent claims 31, 38-40, and 44-45. Indeed, the Office Action admits as much at, *inter alia*, page 36 when it states that Partain “shows in figure 3, a bandwidth broker server that collects information from various **load measurement proxies** located at various points in the network.”

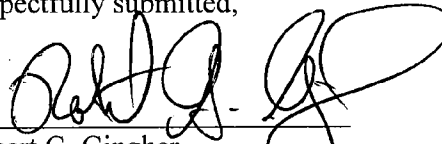
As Partain does not disclose, *inter alia*, controllably changing a frequency used by a radio base station or controlling transmission power of a base station, “based on information on radio link qualities notified from plural radio terminals,” as required by claims 31, 38-40, and 44-45, Applicant urges these claims are in condition for allowance and requests reconsideration and withdrawal of the rejections thereto.

The Office Action rejects claim 32 under 35 U.S.C. §103(a) as being unpatentable over Partain in view of Carlsson. Claim 32 depends from independent claim 31. Partain does not disclose each and every limitation of independent claim 31, as explained above. Carlsson does not cure the deficiency of the Partain reference as applied to independent claim 31. Accordingly, Applicant respectfully submits that claim 32 is in condition for allowance and urges reconsideration and withdrawal of the rejection thereto.

In view of the above, Applicant believes the pending application is in condition for allowance.

Dated: June 25, 2008

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